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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,450	09/26/2005	Yoshikatsu Ichimura	03500.017986.	4632

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EXAMINER	
KRAMSKAYA, MARINA	
ART UNIT	PAPER NUMBER
2858	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/550,450	ICHIMURA ET AL.	
	Examiner	Art Unit	
	Marina Kramskaya	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-11 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-11 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 26 September 2005 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: page 2, lines 9 and 15 state "given by the following formula:". However, no formula is given following the statement.

Appropriate correction is required.

Claim Objections

2. Claim 11 is objected to because of the following informalities: Claim 11 is a method claim wherein the second limitation "a movable structure comprised..." recites structural limitations of an apparatus. Appropriate correction is required.

3. Claim 11 is objected to because of the following informalities: the limitation "electric lines of force emanating from the object" (line 12) is objected to. The "lines" are simply a graphical representation of the electric field emanating from the object, and are not an actual physical property. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim Rejections - 35 USC § 103

5. Claims 1-2 and 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubby et al., US 6,177,800, in view of Liu et al., US 6,418,006.

As per Claims 1 and 11, Kubby discloses an electric potential measuring device and method (see ABS., lines 1-3) comprising:

a signal detection electrode (**30**);

a movable structure (**32**) comprised of a first material portion (**34**) and a second solid material portion (**36**); and

a drive mechanism (**D**) for moving the movable structure in such a way as to change a positional relationship of the first material portion (**34**) and second (**36**) solid material portion for the signal detection electrode (**30**),

wherein the first material portion is comprised of a dielectric (air, i.e. in the shutter opening), the second solid material portion is comprised of a conductive material (shutter **36** is a conductive plate in the movable structure **32** for detection), and a charge induced (see charge accumulation in FIG. 3) on the signal detection electrode (**30**) is modulated by moving the movable structure (by **D**), to measure an electric potential (**V**, see FIG. 2 and 3) of the object (**42**) to be measured.

Kubby does not disclose the first material portion as a solid material, but rather a gas (in the shutter opening).

Liu discloses a voltage-sensing device wherein a movable structure (**12**) is composed of a first solid material (**16**) and a second solid material (**18**) (column 2, lines 15-17).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to compose the first and second portions of a movable structure of a solid material, as taught by Liu, in the system and method of Kubby, in order to provide for increased capacitive coupling.

As per Claim 2, Kubby discloses the electric potential measuring device as applied to claim 1, above. Kubby further discloses the electric potential measuring device wherein said detection electrode (**30**) is formed on a substrate (**18**, see FIG. 1 and 3) disposed in opposition to the object to be measured (**42**, see FIG .3), and said movable structure is periodically movable in a surface parallel to the substrate just above the surface of the object to be measured side of the detection electrode (see FIG. 3, wherein the sensor is moved parallel to the object 42 according to the arrow under the sensor assembly).

As per Claim 5, Kubby discloses the electric potential measuring device as applied to claim 1, above. Kubby further discloses the electric potential measuring device, wherein said second solid material portion (**36**) is periodically shaped in a predetermined direction (see periodic spacing as provided in FIG. 1 by width **w**), and said detection electrode (**30**) is formed in a shape having the same direction and the

same periodic length as the second solid material portion (see FIG. 1 wherein electrode 30 is divided into portions **30a-30c** each periodically shaped like portions **36**).

As per Claim 6, Kubby discloses the electric potential measuring device as applied to claim 5, above. Kubby further discloses the electric potential measuring device, wherein the electric conductor layer (**30**) of a shape having the same direction and the same periodic length as the second solid material portion (**36**) is formed on a portion in which the detection electrode is not formed through an insulator layer (i.e. no insulator layer is present in Kubby ('800)).

As per Claim 7, Kubby discloses the electric potential measuring device as applied to claim 6, above. Kubby further discloses the electric potential measuring device, wherein the shape of said detection electrode (**30**) has a divided structure (divided into portions **30a-30c**), and is constituted such that a signal generated by each of the divided detection electrode can be independently measured and processed (at the output of line **38**).

As per Claim 8, Kubby discloses the electric potential measuring device as applied to claim 1, above. Kubby further discloses the electric potential measuring device, wherein the second solid material portion is comprised of a conductive material (shutter **36** is a conductive plate in the movable structure **32** for detection).

Kubby does not explicitly disclose the electric potential measuring device, wherein the conductive material is grounded.

Liu discloses an electric potential measuring device, wherein the conductive material is grounded (through resistor **14**, as in FIG. 1a).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to ground the conductive material, as taught by Liu, in the system and method of Kubby, in order to prevent parasitic electrical coupling.

As per Claim 9, Kubby discloses the electric potential measuring device as applied to claim 1, above. Kubby further discloses the electric potential measuring device, wherein the movable structure is a sheet-shaped structure (i.e. the structure **32** is a planar shape, see FIG. 1).

As per Claim 10, Kubby discloses the electric potential measuring device as applied to claim 1, above. Kubby further discloses an image forming apparatus (copier/printer **40**), comprising the electric potential measuring device (**V**) according to claim 1 and an image forming means for performing a control of an image formation by using the electric potential measuring device (column 5, lines 5-12).

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubby et al., US 6,177,800, in view of Liu et al., US 6,418,006 as applied to claim 1 above, and further in view of Werner, Jr. et al., US 2003/0057977.

As per Claim 3, Kubby discloses the electric potential measuring device as applied to claim 1, above. Kubby further discloses the electric potential measuring device, wherein said second solid material portion (**36**) is periodically shaped in a predetermined direction (i.e. modulated, column 4, lines 20-27).

Kubby does not explicitly disclose an insulator layer formed on the detection electrode, and an electric conductor layer of a shape having the same direction and the same periodic length as the second solid material portion formed on the insulator layer.

Werner discloses an electric potential measuring device wherein an insulator layer (**211 a-i**) is formed on the detection electrode (**210**), and an electric conductor layer (**213 a-d**) of a shape having the same direction and the same periodic length as the second solid material portion is formed on the insulator layer.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form an insulating layer with a conductive layer over it, as taught by Kubby, in the system of Werner, in order to insulate certain portions of the sensor assembly from electric coupling.

As per Claim 4, Kubby discloses the electric potential measuring device as applied to claim 1, above. Kubby further discloses the electric potential measuring device, wherein said second solid material portion (**36**) is periodically shaped (see periodic spacing as provided in FIG. 1 by width **w**) in a predetermined direction.

Kubby does not disclose an electric conductor layer of a shape having the same direction and the same periodic length as the second solid material portion formed on a detection electrode through an insulator layer, and no insulator layer exists in a part in which the electric conductor layer is not formed but the detection electrode is exposed.

Werner discloses an electric potential measuring device wherein an electric conductor layer (**213 a-d**) of a shape having the same direction and the same periodic length as the second solid material portion is formed on a detection electrode (**210**) through an insulator layer (**211 a-i**), and no insulator layer exists in a part in which the electric conductor layer is not formed but the detection electrode is exposed (through aperture **212**).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form an insulating layer with a conductive layer over the sensor electrode with an exposed part, as taught by Kubby, in the system of Werner, in order to insulate certain portions of the sensor assembly from electric coupling and allow electric coupling through the aperture.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Peterson Jr., US 4,839,581, and Kasahara et al., US 4,553,099, disclose a voltage detection apparatus with a sensing electrode, wherein the detection is due to capacitive coupling.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marina Kramskaya whose telephone number is (571)272-2146. The examiner can normally be reached on M-F 7:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marina Kramskaya
Examiner
Art Unit 2858

MK

DIANE LEE
SUPERVISORY PATENT EXAMINER